June 3, 2003

Mr. Kevin Turner
Environmental Scientist, On-Scene Coordinator
Emergency Response Branch
U.S. Environmental Protection Agency Region 5
c/o Crab Orchard National Wildlife Refuge
8588 Route 148
Marion, IL 62959

Subject: **Superfund-Financed Removal Action Summary Report**
Lefton Iron & Metal Site
East St. Louis, St. Clair County, Illinois
Technical Direction Document No. S05-0109-011
Tetra Tech Contract No. 68-W-00-129

Dear Mr. Turner:

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) is submitting the enclosed Superfund-financed removal action summary report for the Lefton Iron & Metal site in East St. Louis, Illinois. START provided technical support and project management oversight for the removal action. The enclosed report summarizes project activities conducted from October 2001 to September 2002.

If you have any questions or comments regarding the report or need additional copies, please contact me at (314) 892-6322, extension 25, or Thomas Kouris at (312) 946-6431.

Sincerely,

Thomas G. Binz
Tetra Tech START Project Manager

Enclosure

cc: Lorraine Kosik, U.S. EPA START Project Officer (letter only)
Thomas Kouris, Tetra Tech START Program Manager (letter only)

SUPERFUND-FINANCED
REMOVAL ACTION SUMMARY REPORT
LEFTON IRON & METAL
EAST ST. LOUIS, ST. CLAIR COUNTY, ILLINOIS

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Emergency Response Branch
77 West Jackson Boulevard
Chicago, IL 60604

TDD No.:	S05-0109-011
Date Prepared:	June 3, 2003
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Thomas G. Binz
Telephone No.:	(314) 892-6322, extension 25
U.S. EPA On-Scene Coordinator:	Kevin Turner
Telephone No.:	618-997-0115

CONTENTS

FIGURES

TABLES

EXHIBITS

ABBREVIATIONS, ACRONYMS, AND SYMBOLS

µg/100 cm^2	Microgram per 100 square centimeters
bgs	Below ground surface
CLP	Contract Laboratory Program
DOT	U.S. Department of Transportation
EOD	Explosive Ordnance Disposal
EQM	Environmental Quality Management, Inc.
ERRS	Emergency and Rapid Response Services
Grantham	Grantham Trucking Company
Haz-Cat	Hazard characterization
IDPH	Illinois Department of Public Health
IEPA	Illinois Environmental Protection Agency
mg/L	Milligram per liter
NORM	Naturally occurring radioactive material
OSC	On-Scene Coordinator
PCB	Polychlorinated biphenyl
ppm	Part per million
QA	Quality assurance
QC	Quality control
River Metals	River Metals Recycling Inc.
RSE	Removal site evaluation
START	Superfund Technical Assessment and Response Team
TCLP	Toxicity characteristic leaching procedure
TDD	Technical Direction Document
Tetra Tech	Tetra Tech EM Inc.
TRRA	Terminal Rail Road Association
TSCA	Toxic Substances Control Act
TSDF	Treatment, storage, or disposal facility
U.S. EPA	U.S. Environmental Protection Agency
XRF	X-ray fluorescence

EXECUTIVE SUMMARY

In September 2001, the Tetra Tech EM Inc. Superfund Technical Assessment and Response Team (START) was tasked to perform oversight activities at the Lefton Iron & Metal site in East St. Louis, St. Clair County, Illinois, under Technical Direction Document (TDD) No. S05-0109-011. From October 2001 to September 2002, START worked with representatives of U.S. Environmental Protection Agency (U.S. EPA) Region 5 and with Emergency and Rapid Response Services personnel from Environmental Quality Management, Inc. (EQM), to remove polychlorinated biphenyl- (PCB) and lead- impacted soil materials from the site for disposal at U.S. EPA-approved treatment, storage, or disposal facilities. START has developed this report to summarize the project activities that occurred in the 11-month period, during which substantial amounts of PCB- and lead-impacted soil were excavated, transported, and delivered to either a Toxic Substances Control Act or a Subtitle Class "D" nonhazardous solid waste landfill facility. A total of 44,952 tons of soil was shipped to appropriate off-site disposal facilities.

The Lefton Iron & Metal site is composed of two unattached parcels in East St. Louis. The Lefton West facility is located at 205 South 17th Street, and the Lefton East facility is located at 1901 Converse Avenue. During the course of routine operations, Lefton Iron & Metal processed an unspecified amount of ferrous and nonferrous scrap steel materials. Scrap steel products were sized, separated, and shipped to regional steel mills for recycling and smelting. Additionally, Lefton Iron & Metal at one time used two hydraulically operated crushers and one steel shredder for car and other scrap steel sizing activities. It is believed that car crushing operations and other steel reclamation activities released an unknown amount of PCBs. It is further believed that lead and other heavy metals were released to site soils by former lead smelting operations in the site's vicinity.

START worked with U.S. EPA and EQM to remove PCB- and lead-impacted soil from the site. Because unexpectedly large amounts of PCB- and lead-impacted soils required disposal, only the uppermost layer of impacted soil materials was removed. Even after increased project funding was obtained, U.S. EPA's best remedy was to eliminate the immediate threat to human health. Because PCBs are hydrophobic and immobile in groundwater, U.S. EPA chose to install a cap of clean soil over the impacted subsurface soil materials. START does not anticipate any further activities under the TDD.

1.0 INTRODUCTION

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) has prepared this Superfund-financed removal action summary report in accordance with Technical Direction Document (TDD) No. S05-0109-011, which the U.S. Environmental Protection Agency (U.S. EPA) assigned to START. The scope of this TDD was to provide technical support and project management oversight for a removal action intended to eliminate or mitigate the threat posed by hazardous substances such as polychlorinated biphenyls (PCB) and lead at the Lefton Iron & Metal site in East St. Louis, St. Clair County, Illinois. Specifically, START was tasked to (1) analyze the potential impacts on human health and the environment posed by historical releases during scrap metal separation, sizing, and recycling activities; (2) sample site media for analysis; (3) oversee daily removal action activities; and (4) develop this final summary report.

This removal action summary report provides background information on the site, describes the time-critical removal action conducted from October 2001 to September 2002, and provides a summary of the project. The appendix presents a photographic log of site conditions before and during the removal activities.

2.0 BACKGROUND INFORMATION

This section discusses the site location and history, previous enforcement actions and investigative activities conducted by state and local authorities, and U.S. EPA site evaluation efforts.

2.1 SITE LOCATION AND HISTORY

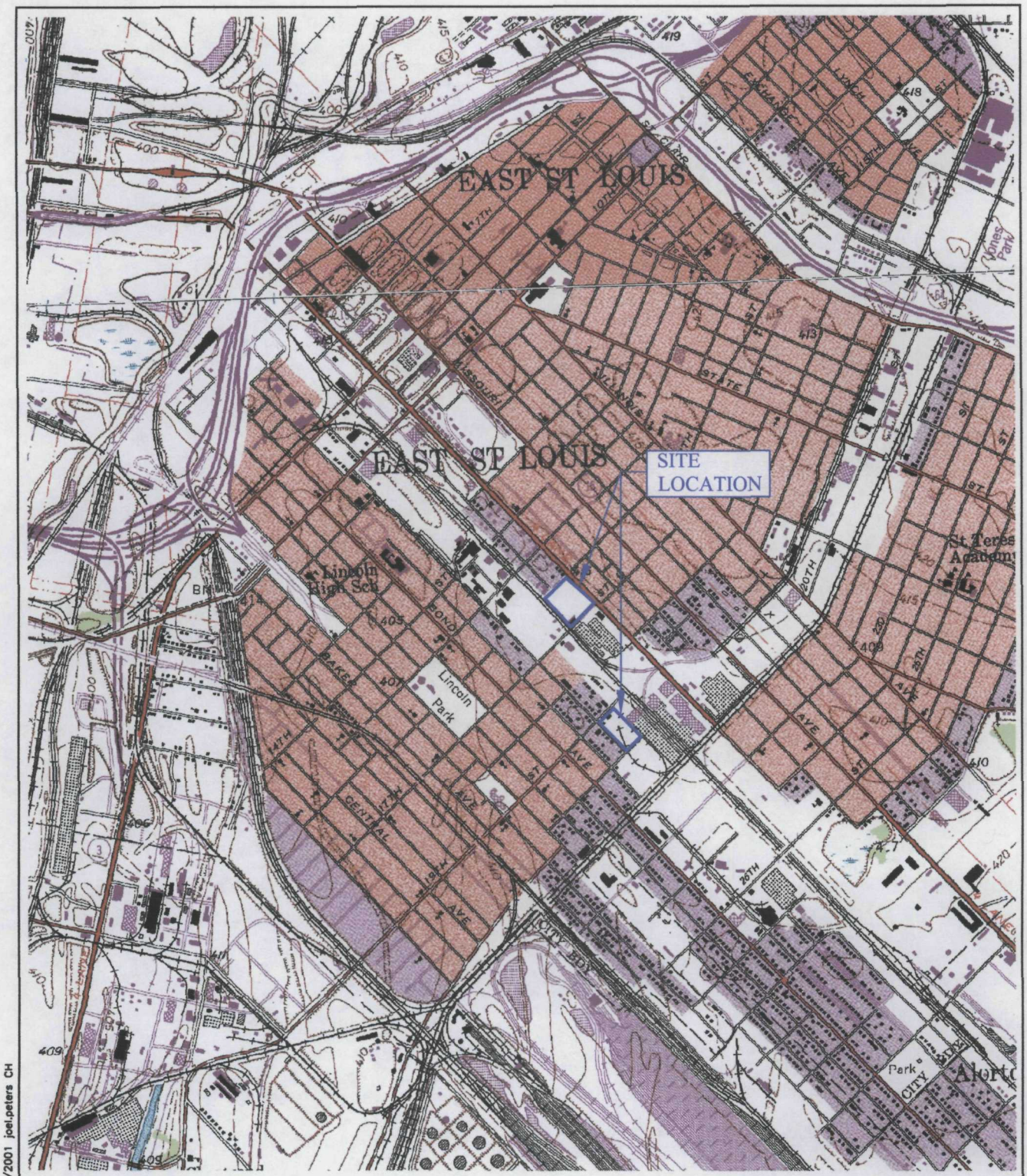
The Lefton Iron & Metal site was previously operated as a scrap metal yard and is composed of two separate parcels: the Lefton West facility at 205 South 17th Street and the Lefton East facility at 1901 Converse Avenue. Figure 1 shows the site location and site boundaries. Both parcels are within the boundaries of East St. Louis, St Clair County, Illinois.

During its operational history, Lefton Iron & Metal processed an unspecified amount of ferrous and nonferrous scrap metal. The metal was sized, sorted according to type and grade, and then shipped to regional steel mills for smelting in support of steel production. The site reportedly was abandoned in 1997 as a result of depressed market prices for scrap steel.

The site is located in an area that is the focus of a cooperative effort to limit exposure to elevated lead concentrations for sensitive populations in East St. Louis. For the reasons stated below, the Illinois Department of Public Health (IDPH) and the U.S. EPA Region 5 E. St. Louis Gateway Initiative asked the U.S. EPA Region 5 Removal Branch to conduct a time-critical removal action at the site.

2.2 STATE OF ILLINOIS ENFORCEMENT ACTIONS

Illinois Environmental Protection Agency (IEPA) conducted sampling events in 1992, 1995, and 1997 at the Lefton West facility. As a result, PCBs were detected at concentrations exceeding 50 parts per million (ppm) in the soil matrix at the Lefton West facility. IEPA was unable to gain access to the Lefton East facility, and when it attempted to query the former owner/operator regarding a complaint that PCBs were present at the site, IEPA received no response. Consequently, IEPA requested the assistance of the U.S. EPA Region 5 Removal Branch.



N

0 1000 2000

SCALE IN FEET

QUADRANGLE LOCATION

SOURCE: MODIFIED FROM USGS, GRANITE CITY AND CAHOKIA, ILLINOIS-MISSOURI QUADRANGLES, 1954, PHOTOREVISED 1993.

G:\G\9009\L0108036\ lefton.dwg 11/26/2001 joel.peters CH

LEFTON IRON AND METAL SITE
EAST ST. LOUIS, ST. CLAIR COUNTY, ILLINOIS
TDD NO. S05-0108-036

FIGURE 1
SITE LOCATION MAP

Tetra Tech EM Inc.

2.3 INVOLVEMENT OF LOCAL AUTHORITIES

In 2001, the Lefton Iron & Metal site was again brought to the attention of U.S. EPA Region 5 through the E. St. Louis Gateway Initiative. The East St. Louis Gateway Initiative convened an ad hoc group targeting lead as a contaminant of concern for E. St. Louis and provided funding for IDPH to perform soil lead screening in East St. Louis. IDPH used a targeted site identification process in which the residential areas nearest to old industrial facilities were sampled first. Additionally, the Metro East Lead Collaborative Partnership which included St. Mary's Hospital in East St. Louis, collected blood lead data for children in East St. Louis. IDPH's soil sampling efforts revealed lead concentrations as high as 30,000 ppm on residential properties bordering the site. Also, St. Mary's Hospital collected data that revealed children with elevated levels of lead in their blood in the site area. The U.S. EPA Region 5 Removal Branch became involved based on the IDPH sample results showing high lead data in old industrial areas bordering residential areas and the St. Mary's study showing children with elevated blood levels. For these and other reasons, U.S. EPA elected to perform a removal evaluation in order to better identify the areal extent of heavy metal and PCB contamination at the site.

2.4 2001 REMOVAL SITE EVALUATION

In September 2001, U.S. EPA directed START members from both Tetra Tech and Project Resources, Inc., to document site conditions, collect site soil samples, and submit the samples for laboratory analysis as part of a removal site evaluation (RSE). X-ray fluorescence (XRF) field screening data was also collected. A loose grid network was established for the site, and potentially impacted areas were identified by the U.S. EPA On-Scene Coordinator (OSC) using the XRF screening unit. Surface and subsurface soil samples were then collected and analyzed for heavy metals and PCBs. At the Lefton West and East facilities, a total of 27 test pits were excavated, 118 locations were screened with the XRF unit, and 21 soil samples were collected for laboratory verification analysis. RSE sample collection activities began on September 11 and were completed on September 13, 2001.

Several site buildings containing former car crushing and scrap steel bailing systems were not sampled during the RSE. Various sizes, shapes, and types of ferrous and nonferrous scrap metal materials were found piled or scattered across the site. START was unable to collect soil samples directly under the scrap metal piles.

The RSE revealed elevated concentrations of heavy metals and PCBs in surface and subsurface soils at the site. Analytical results for the 21 soil samples collected during the RSE were used to make the following determinations:

- The site posed a threat of actual or potential exposure of nearby human populations to hazardous substances or pollutants or contaminants.
- Hazardous substances or pollutants or contaminants in soils largely at or near the surface of the site might migrate or pose a threat of release.
- The site posed an immediate risk to public health and welfare.

For these reasons, U.S. EPA developed an action memorandum dated September 26, 2001, in which the agency requested funding approval to perform a time-critical removal action at the site.

To support the time-critical removal action at the Lefton Iron & Metal site, U.S. EPA selected an Emergency and Rapid Response Services (ERRS) contractor, Environmental Quality Management, Inc. (EQM), of Cincinnati, Ohio, to perform removal and disposal services on a comprehensive, turnkey basis. U.S. EPA also selected a START contractor, Tetra Tech, to provide technical support and project management oversight during the removal action.

This section describes the removal action in terms of (1) scrap steel removal and recycling activities, (2) soil and other waste stream removal activities, (3) confirmation sampling and residual contamination, and (4) final site restoration.

3.1 SCRAP STEEL REMOVAL AND RECYCLING ACTIVITIES

This section discusses activities related to scrap steel removal and recycling during the project. As previously discussed, large piles of scrap steel (some standing as tall as 30 feet and some more than 200 feet across) containing various shapes and sizes of scrap materials were scattered across large portions of both the Lefton East and Lefton West facilities. This section describes site preparation and mobilization; scrap steel sorting, loading, and disposal; and wipe sampling for PCB analysis.

3.1.1 Site Preparation and Mobilization

On October 24, 2001, ERRS team members began mobilizing temporary field offices; heavy equipment; ancillary supplies to support field activities; and field personnel, including operators, technicians, a removal manager, and a field clerk. Temporary offices (the command post) were set up in the northeast corner of the Lefton West facility. Electrical, telephone, and water service connections were also established in support of field operations. Adjacent to the command post, a contractor parking area and a heavy equipment laydown area were constructed and were maintained during the entire project.

A security guard service was hired to maintain site security during project off-hours. The security service set up a base of operations in the personnel break trailer. When possible, heavy equipment was returned

to the contaminant reduction zone near the command post in order to avoid potential vandalism during periods of non-use.

Additionally, repairs were made to the existing site security fence in order to control access to the site and impede vagrant access. Repairs to fencing continued during most of the project, as itinerant trespassers would cut holes in the fencing to remove scrap steel after normal working hours.

As a project requirement, a site access haul road was constructed and maintained to facilitate separation and removal of scrap steel materials scattered across both facilities. Particular attention was given to the location of the haul road in order to ensure that it could serve a dual purpose of (1) supporting the loading and off-site transport of scrap steel and (2) expediting on-site movement and handling of PCB- and lead-impacted soils in preparation for their off-site transport and disposal at the appropriate treatment, storage, or disposal facility (TSDF).

A 100- by 100-foot grid system was established on both the Lefton West and Lefton East facilities. The grid system was used to track the progress of soil excavation, sampling, and backfilling activities.

Drums, tanks, and other containers holding remnant liquid or solid materials were segregated, staged, and sampled at an on-site hazard characterization (Haz-Cat) station for waste identification purposes. For example, Haz-Cat sampling was performed for non-PCB oil materials that were likely used for lubrication of heavy equipment operated at the site.

3.1.2 Scrap Steel Sorting, Loading, and Disposal

To facilitate excavation and removal of PCB- and heavy metal-impacted soils, ERRS personnel had to first remove the scrap steel covering large areas of the site. This activity was discussed with the U.S. EPA OSC. To minimize the total project cost as well as the amount of soil material shipped off site, the OSC directed that a local contractor be hired to perform the following tasks:

- Separate ferrous metal from nonferrous materials
- Reduce in length or width any materials greater than 4 by 4 feet in size (18 inches for railroad steel sections)

- Separate and remove any materials found to be unacceptable for steel smelting
- Load separated steel materials into U.S. Department of Transportation- (DOT) approved shipping containers for shipment to the appropriate off-site scrap steel smelting facility

The scrap steel sorting and disposal contractor, Grantham Trucking Company (Grantham), was provided with a large sorting area in the southeast corner of the Lefton West facility. This sorting area had been sampled and found to be free of elevated concentrations of PCBs and lead. All recoverable steel materials were loaded by two ERRS-provided trackhoes into dedicated dump trucks with steel beds. The two ERRS-provided dump trucks made frequent deliveries to Grantham's scrap steel sorting area. Dump trucks containing steel materials collected at the Lefton West facility used the on-site gravel haul road constructed during the clearing and grubbing phase of the project. All scrap steel materials collected at the Lefton East facility were transported to the Lefton West facility by dump trucks using public roads.

Steel sorting activities were aided by the use of a crane-mounted magnet for ferrous materials and a tractor-mounted hydraulic finger grapple for nonferrous grades of steel. Oxyacetylene torches were used to cut railroad steel sections into 18-inch pieces prior to their loading.

From November 14, 2001, to February 21, 2002, Grantham prepared an unspecified amount of scrap steel and delivered it to various regional scrap steel smelting facilities.

3.1.3 Wipe Sampling for PCB Analysis

Because of concerns associated with the presence of electrical transformer carcasses potentially containing PCBs among the scrap steel materials, wipe samples were collected for PCB analysis from a representative mix of scrap steel items. Also, Grantham requested that U.S. EPA provide assurances that no regulated quantities of hazardous materials would interfere with scrap steel deliveries to off-site steel smelting facilities. For this reason, START collected 14 wipe samples for PCB analysis for compliance assurance purposes.

Table 1 summarizes the PCB analytical results for the 14 wipe samples collected on site prior to scrap steel separation, loading, and transport to steel smelting facilities. These results ranged from nondetect to 45.7 micrograms per 100 square centimeters ($\mu g/100\ cm^2$).

TABLE 1

SUMMARY OF PCB ANALYTICAL RESULTS FOR WIPE SAMPLES

Sample ID	Sampling Location	PCB Concentration
SS-01	Steel stockpile (southwest corner) in cell B-2 of sorting area	9.9
SS-02	Northwest corner of steel stockpile in cell B-3	6.8
SS-03	Railroad steel section in cell C-2	0.23
SS-04	Small steel plates on east side of car crusher	3.51
SS-05	Floor of car crusher building	25.4
SS-06	Scrap pile on southeast side in cell B-3	0.92
SS-07	Scrap pile on northeast side in cell F-5	6.1
SS-08	Scrap pile on east side of crane in cell F-4	3.78
SS-09	Long steel pile near building #1 in cell E-6	0.28
SS-10	Concrete floor from building #2 in cell E-4	22.7
SS-10 Dup	Duplicate of SS-10	ND (<0.5)
SS-11	Concrete floor from building #3 in cell E-3	44.2
SS-12	Inside carcass of transformer T-4	45.7
SS-13	Concrete floor of former garage machine shop	1.98

Notes:

PCB concentrations are presented in micrograms per 100 square centimeters.

ND = Nondetect
PCB = Polychlorinated biphenyl

3.2 SOIL AND OTHER WASTE STREAM REMOVAL ACTIVITIES

This section discusses removal of soil and other waste streams for off-site disposal during the project. Several waste streams were collected, sorted, and transported for off-site disposal. As stated previously, U.S. EPA and START provided continuous oversight and monitoring throughout the removal action. Based on concerns about actual or potential exposure of nearby human populations to hazardous substances at the site, U.S. EPA selected a surgical excavation approach for removal of impacted soil materials. The depth of excavation was generally 1.5 to 2.0 feet below ground surface (bgs) along the perimeter fenceline; deeper excavation was generally conducted to a maximum depth of 3.5 to 4.0 feet bgs.

During the course of site clearing and grubbing, various waste materials (in addition to the scrap steel discussed in Section 3.1) were removed and segregated for off-site transport and disposal. The soil waste streams that were removed from the site were as follows:

- Soil containing (1) lead concentrations below the toxicity characteristic leaching procedure (TCLP) regulatory limit of 5.0 milligrams per liter (mg/L) and (2) less than 50 ppm PCBs (special waste)
- Soil containing PCB concentrations greater than or equal to 50 ppm (Toxic Substances Control Act- [TSCA] regulated)

In an effort to control the depth of excavation (and thus project costs) as well as cross-contamination during excavation, a flat plate was welded to the bucket teeth of the excavator. Also, the ERRS removal manager worked closely with the U.S. EPA OSC and START to obtain daily instructions related to depth control for grid excavation on a cell-by-cell basis. As a means to control fugitive dust during soil excavation and transport activities, water was routinely applied from a metered municipal drinking water source. The water was drawn from either the local, 2-inch-diameter water service line or a truck-pulled water cart filled from the 2-inch-diameter water service line. Water was not applied during times of sufficient rainfall.

Additional waste materials collected for off-site disposal were as follows:

- Scrap tires either previously buried on site or improperly disposed of in the general vicinity of the site. IEPA delivered a total of 11,694 truck and car tires to a tire recycling facility under the state program for abandoned tires.
- Scrap railroad ties generated during removal of various on-site, inactive railroad sidings
- Firebrick with nonregulated levels of naturally occurring radioactive material (NORM)
- Practice ordnance

This section describes the following removal activities associated with soil and other waste streams at the site:

- Soil screening and sampling activities
- Off-site disposal of used railroad ties
- Removal of low-level lead-impacted soil
- Removal of PCB-impacted soil
- Disposition of NORM
- Controlled detonation and disposal of practice ordnance

3.2.1 Soil Screening and Sampling Activities

On-site segregation of lead- or PCB-impacted soil materials or both was typically performed after soil materials were removed in 3- or 6-inch lifts. XRF and Chlor-n-soil™ test kit screening tools were routinely used in an attempt to identify the lateral and vertical extent of low-level lead or PCB contamination prior to grid excavation on a cell-by-cell basis. START screened soil materials in advance of excavation activities. In addition, the waste acceptance criteria of the Allied Waste Systems Subtitle Class "D" landfill in South Roxana, Illinois, included a condition that one laboratory analytical result for a confirmation sample must be submitted for every 1,000 cubic yards of impacted soil delivered to the landfill. Post excavation confirmation sampling was conducted by U.S. EPA and START using the following sampling techniques:

- Each cell was field-screened for PCBs with the Chlor-n-soil™ test kit, which produced a colorimetric "yes/no" response of > 50 ppm or < 50 ppm PCBs, respectively. If field screening results indicated < 50 ppm PCBs, a composite sample was collected from each soil stockpile.

- The composite sample was collected using no less than nine samples of equal volume and was thoroughly mixed in aluminum pie pans prior to sample containerization for PCB analysis. In addition, XRF field screening instrumentation was used to determine lead concentrations at nine sample points within each 100- by 100-foot cell of the sampling grid.

- For samples collected for laboratory confirmation analysis, nine sample points were randomly selected across a stockpile, and care was taken to collect representative samples from at least one top, four side, two middle, and two bottom portions of the stockpile.

- Survey flags and maps were used to identify each stockpiles and their respective volumes in order to facilitate future shipment of stockpiled material to the appropriate TSDF.

- Composite samples were labeled with the sampling location, date, and time; preserved to 4 °C; protected against breakage with bubble wrap; and shipped for overnight delivery to the U.S. EPA-approved laboratory in accordance with Contract Laboratory Program (CLP) or equivalent quality assurance and quality control (QA/QC) protocols.

3.2.2 Off-Site Disposal of Used Railroad Ties

Lefton Iron & Metal previously used a series of on-site railroad sidings for movement of scrap metal to and from scrap steel smelting facilities. Field sampling efforts revealed PCBs and lead in soil not only surrounding but below the on-site railroad sidings. To gain access to the impacted soils, a decision was made to remove the railroad siding installations. All railroad steel sections were removed and cut into 18-inch pieces prior to their off-site shipment to steel smelting facilities. Used railroad ties were staged on site during the scrap steel removal phase of the project.

The ERRS contractor investigated reuse options for the used railroad ties. However, based on the potential liability associated with the source of the used ties, the inconsistent quality of the ties, and the labor and machine costs associated with segregating good and bad ties, off-site disposal of the ties was chosen as the lowest-cost alternative. Also, discussions with local landfill operators revealed that "generic permits" are in place to expedite disposal of used ties in Illinois solid waste landfills.

During railroad siding removal activities, a total of 126.41 tons of used ties was removed and delivered to the Allied Waste Systems solid waste landfill in South Roxana, Illinois. Table 2 summarizes the amounts of used railroad ties that were placed in the landfill.

TABLE 2

SUMMARY OF USED RAILROAD TIE DISPOSAL

Load No.	Date of Transport	Bill of Lading No.	Load Tonnage	Total Tonnage (Accumulated)
1	01/23/02	1061	7.26	7.26
2	01/23/02	1062	7.1	14.36
3	01/23/02	1063	5.37	19.73
4	01/23/02	1064	7.1	26.83
5	01/23/02	1065	7.63	34.46
6	01/23/02	1066	6.74	41.20
7	01/23/02	1067	7.78	48.98
8	01/23/02	1068	6.47	55.45
9	01/23/02	1069	6.05	61.50
10	01/23/02	1070	5.91	67.41
11	01/24/02	1071	7.57	74.98
12	01/24/02	1072	6.18	81.16
13	01/24/02	1073	6.4	87.56
14	01/24/02	1074	8.75	96.31
15	01/24/02	1075	6.14	102.45
16	01/24/02	1076	7.57	110.02
17	01/24/02	1077	6.23	116.25
18	01/24/02	1078	6.86	123.11
19	01/24/02	1079	3.3	**126.41**

3.2.3 Removal of Low-Level Lead-Impacted Soil

Soil removal was the most time-consuming task associated with the time-critical removal action. As stated in Section 3.2.1, soil was excavated in either 3- or 6-inch lifts. Soil removal efforts at both the Lefton West and East facilities were conducted under strict controls whereby soil was approved for removal by both U.S. EPA and START. Soil was removed on a cell-by-cell basis using the established 100- by 100-foot grid system. Soil stockpiles were established next to existing or constructed access roads in order to facilitate future direct loading of soil for transport to the appropriate off-site disposal facility. After confirmation sample analytical results for lead and PCBs were obtained from the U.S. EPA-approved laboratory, soil materials were loaded into DOT-approved dump trailers for delivery to the Allied Waste Systems landfill in South Roxana, Illinois. Low-level lead-impacted soil was identified on the State of Illinois Uniform Waste Manifests as a "non-hazardous, special waste" material.

The Allied Waste Systems landfill maintains the permits required to accept nonhazardous, special waste materials in accordance with all applicable federal, state, and local regulations. Furthermore, the landfill's sampling and analytical procedures for low-level lead-impacted soil were followed as outlined in Section 3.2.1. START was not tasked to audit the landfill's compliance with applicable regulations.

Over a period of 6 months, 1,145 truckloads of low-level lead-impacted soil containing PCB concentrations of less than 50 ppm were transported to the Allied Waste Systems landfill. Table 3 provides a monthly summary of the quantities of this soil disposed of at the landfill.

TABLE 3

SUMMARY OF LOW-LEVEL LEAD-IMPACTED SOIL DISPOSAL

Month and Year	Soil Disposed of at Landfill (tons)
January 2002	672.09
February 2002	4,855.88
March 2002	2,523.73
April 2002	3,234.32
May 2002	6,548.85
June 2002	7,343.26
Total	**25,178.13**

3.2.4 Removal of PCB-Impacted Soil

Historical car crushing and shredding operations at the site are believed to have resulted in releases of PCBs to the environment. Also, PCB-containing oils in small electrical capacitors, fuses, or switches and in electrical transformers are believed to have been released. Excavation activities and inspection of site soils revealed a homogenous mix of metallic and nonmetallic materials, sometimes sponge-like and sometimes containing electrical or electrical-mechanical materials referred to as "auto-fluff." Much of the site soil matrix consisted of oil-saturated soil and gravel interspersed with rust fines, small metallic articles, and rubber articles such as hoses and wire wrapping. The auto-fluff materials were typically observed near the former car crushing and scrap steel bailing operations at the Lefton West facility. PCBs were generally found in the middle section of the Lefton West facility and were generally distributed across the entire Lefton East facility.

At the Lefton East facility, PCBs were found to be more widespread in the subsurface than was the case at the Lefton West facility and were sometimes observed in conjunction with a strong diesel fuel odor, especially in the middle section of the facility. PCB concentrations at both facilities ranged from the low ppm range to a high of approximately 400 ppm.

Under current laws regarding PCB management and disposal, U.S. EPA was required to arrange for off-site transport and disposal of soils with PCB concentrations above 50 ppm. Also, competitive bid arrangements were required for the disposal of such soils. The ERRS contractor managed the bidding process and made contract arrangements to support the following project requirements:

- Upgrading of the Lefton East facility railroad spur
- Transport of TSCA-regulated soils to a TSCA-permitted landfill
- Disposal of TSCA-regulated soils

These project requirements are discussed further below.

3.2.4.1 Upgrading of Railroad Spur

After sample analytical results indicated that significant volumes of site soil contained PCB concentrations greater than 50 ppm, U.S. EPA evaluated various options and elected to ship gondola- size railcar quantities of PCB-impacted soil to the U.S. EPA-permitted TSCA landfill called Lone Mountain operated by Safety-Kleen Corporation in Waynoka, Oklahoma. Truck transport might have been faster, but shipping the waste by rail to the Lone Mountain facility was advantageous from both the economic and operational standpoints. The 110-ton capacity of gondola railcars provided the lowest waste transport cost. Moreover, the Lefton East facility had an inactive railroad spur that entered the facility along the south side and terminated in a central area between the perimeter security fences. After competitive bidding activities were completed, U.S. EPA selected a railroad maintenance contractor (Rail Works) to upgrade the existing railroad spur. Rail Works was required to meet a specification designated by the owner of the main line serving the site, which is the Terminal Rail Road Association (TRRA). TRRA required that Rail Works remove and replace every third or fourth railroad tie, replace rail spikes as necessary, re-establish the appropriate gauge distance, and ensure operation of switching gear equipment on the derailer side of the spur.

3.2.4.2 Transport of TSCA-Regulated Soils

During the removal action, PCB-impacted materials were typically excavated in 3- or 6-inch lifts. The materials were stockpiled on site, sampled in 1,000-cubic-yard increments in accordance with Allied Waste Systems' waste acceptance criteria, and analyzed for PCBs as outlined in Section 3.2.1. When analytical results indicated PCB concentrations greater than 50 ppm, the associated materials were loaded into articulated, 4-wheel-drive dump trucks for transport to the railroad spur at the Lefton East facility. When on site, the articulated dump trucks traveled on haul roads constructed on gravel road beds by ERRS personnel. Trucks traveled from the Lefton West facility to the Lefton East facility by means of the public road system along Brady Avenue. The East St. Louis Streets Department had closed this street to public access. Therefore, ERRS personnel were required to replace barricades on the street on a daily basis.

At the Lefton East facility, ERRS personnel had constructed an access road that incorporated a heavy equipment loading pad. This pad was used to load stockpiled soils delivered from within the Lefton East facility or from the Lefton West facility into gondola railcars. A large, rubber-tired loader with calibrated scales was used to load gondola railcars with PCB-impacted soils. This loader was also used to move empty gondola railcars into position for loading and to push loaded railcars into position next to the TRRA main rail line.

Rail shipments of PCB-impacted soil were scheduled on an as-needed basis and were generally controlled by the availability of empty gondola railcars. However, during switch-out of full gondola railcars in the early morning hours on or before April 11, 2002, TRRA created a minor incident that temporarily shut down soil loading and transport operations. During the switch-out of full gondola railcars with empty units, the rail sections on the TRRA side of the derailer moved out of gauge. Fortunately, the single gondola railcar affected by this gauge problem remained on the tracks. Rail Works was immediately contacted to correct the out-of-gauge condition. After the condition was remedied, rail shipments of PCB-impacted soil to the TSCA landfill resumed sometime between April 12 and 15, 2002, and switch-out of gondola railcars resumed during the evening of April 15, 2002.

3.2.4.3 Disposal of TSCA-Regulated Soils

Safety-Kleen Corporation's Lone Mountain landfill maintains the permits required to dispose of TSCA-regulated waste materials in accordance with all applicable federal, state, and local regulations. START was not tasked to audit the landfill's compliance with applicable regulations. Sampling and analytical procedures for TSCA-regulated, PCB-impacted soil at the site were followed as outlined in Section 3.2.1.

Over a period of 5 months, a total of 26,639.12 tons of PCB-impacted soil was transported from the site to the Lone Mountain landfill. Table 4 provides a monthly summary of the quantities of this soil disposed of at the landfill.

TABLE 4

SUMMARY OF PCB-IMPACTED SOIL DISPOSAL

Month and Year	Soil Disposed of at Landfill (tons)
February 2002	1,845.25
March 2002	8,216.57
April 2002	8,245.00
May 2002	6,856.60
June 2002	1,475.70
Total	**26,639.12**

3.2.5 Disposition of NORM

As a matter of routine, START monitored site conditions for radiation sources. Monitoring occurred primarily during the scrap steel preloading phase. START used a Ludlem Measurement Inc. (Model No. 192, Serial No. 149829) direct reading instrument belonging to the U.S. EPA OSC to conduct the monitoring . The direct readings were typically below the background level (less than 20 microrems/hour). The typical range of readings during scrap steel survey activities was between nondetect and 12 microrems/hour. Survey readings were taken for every 100 ton estimate of scrap steel collected.

During the removal action, a truck carrying scrap steel left the Lefton West facility during the evening of December 26, 2001, and traveled to River Metals Recycling Inc. (River Metals) in Louisville, Kentucky. On the morning of December 27, 2001, the truck was rejected by River Metals because monitors detected radiation slightly above background levels. As an operating and state requirement, River Metals contacted the Kentucky Department of Radiation Control. As a courtesy, State of Kentucky officials notified the Illinois Department of Nuclear Safety because the scrap steel originated in Illinois. Also, the Kentucky Department of Radiation Control issued a DOT exemption letter allowing the truck to return the article that had caused the rejection to the Lefton Iron & Metal site. During the afternoon of December 28, 2001, the truck returned the article in question to the site. The article was a 3- by 3-foot,

metal firebox lined with firebrick and slag. Firebrick commonly exhibits low radiation levels from its naturally occurring mined sources.

Ultimately, the Illinois Department of Nuclear Safety assisted U.S. EPA in arranging for the disposal of three small fireboxes from the site at the Subtitle Class "D" landfill operated by Allied Waste Systems in South Roxana, Illinois. The nonspecial waste NORM fireboxes were codisposed with lead-impacted soil at the landfill on April 16, 2002, under manifest number IL 10092805. No other reporting was required for the NORM.

3.2.6 Controlled Detonation and Disposal of Practice Ordnance

During site clearing and grubbing activities, 13 Mark-82 target practice dummy bombs were discovered in a heavily overgrown area in the southwest corner of the Lefton West facility. (A 14th bomb was later discovered in a concrete pit hidden by collected rainwater.) The U.S. EPA OSC immediately contacted Scott Air Force Base, which is located in the site vicinity. Representatives of the U.S. Air Force 932nd Explosive Ordnance Disposal (EOD) Unit were then dispatched to the Lefton West facility. On December 11, 2001, ERRS personnel delivered the dummy bombs to Columbia Quarry in Columbia, Illinois, for controlled detonation by Air Force EOD personnel. As an added safety precaution, the bomb casings were punctured with shape charges in an area of the quarry that had been used for other controlled detonation projects. The detonation was intended to make holes in the bomb casings in order to

- Remove the sand- or concrete-filled cores
- Confirm that the bombs did not contain remnant explosive compounds
- Facilitate the ultimate disposition of the bomb casings as scrap metal
- Provide a training opportunity for Air Force EOD personnel

All the bomb casings were safely punctured by means of controlled detonation, emptied of their sand filler, and returned to the Lefton Iron & Metal site for disposition as scrap steel.

3.3 CONFIRMATION SAMPLING AND RESIDUAL CONTAMINATION

This section discusses post-excavation confirmation sampling as well as the lead and PCB contamination that remains at the site. As stated above, START provided continuous oversight and monitoring throughout the time-critical removal action. Additionally, START managed collection of required confirmation samples during the entire course of soil excavation and stockpiling activities.

On August 27 and 28, 2002, IEPA mobilized a truck-mounted Geoprobe™ unit to obtain data on residual soil contamination at both the Lefton East and West facilities. The results of the IEPA Geoprobe™ sampling initiative are not included herein, as IEPA's final report on the sampling was not available to START when this removal action summary report was prepared.

3.3.1 Confirmation Sample Collection and Analysis

During soil excavation and removal, representative confirmation soil samples were collected from each grid cell and analyzed at an off-site, U.S. EPA-approved laboratory to determine whether the project cleanup objectives had been met. The laboratory provided sample analytical results for total lead and PCBs on a 24-hour turnaround basis. Quick-turnaround results were needed to conduct efficient removal of soil in the loose grid system established at the Lefton East and West facilities. Each cell was subjected to confirmation sampling at least once, and most cells required numerous sampling events because of the PCB contaminant concentrations discovered at greater depths in the site soil matrix. In addition, disposal decisions for soil stockpiles were made after receipt of representative sample analytical results; based on these results, stockpiled soil was disposed of at either a local Subtitle Class "D" nonhazardous waste landfill or a U.S. EPA-approved TSCA land disposal facility.

Confirmation sample analytical results for lead and PCBs in surface soil and in soil 6 inches bgs are summarized below.

3.3.1.1 Confirmation Sample Results for Lead in Surface Soil

Tables 5 and 6 summarize residual lead concentrations detected in surface soil after excavation at the Lefton West and Lefton East facilities, respectively. Each lead concentration presented in the tables was detected in a soil sample composited from nine points within a 100- by 100-foot grid cell. The surface soils represented in the tables were later covered with clean, imported soil.

TABLE 5

RESIDUAL LEAD CONCENTRATIONS IN LEFTON WEST FACILITY SURFACE SOIL

	1	2	3	4	5	6	
A	252	286	640	304	NSC	NSC	A
B	BDL	**1,310**	22.4	**3,730**	NSC	NSC	B
C	820	859	818	**1,670**	**1,340**	621	C
D	30.1	895	**2,270**	**3,180**	**1,010**	816	D
E	143	33.8	**1,030**	**2,600**	344	144	E
F	525	151	71.5	**2,940**	**2,800**	144	F
G	Off site	Off site	Off site	192	**2,330**	36.1	G
H	Off site	Off site	Off site	**1,410**	**2,820**	**1,160**	H
	1	2	3	4	5	6	

Notes:

All concentrations are presented in parts per million (ppm).
Bold values exceed the lead cleanup objective of 1,000 ppm.

BDL = Below detection limit
NSC = No sample collected; surface covered by concrete, buildings, or clean rock
Off site = No sample collected; grid cell lies outside facility boundaries

TABLE 6

RESIDUAL LEAD CONCENTRATIONS IN LEFTON EAST FACILITY SURFACE SOIL

	1	2	3	
A	428	**2,520**	**2,360**	A
B	428	**2,520**	**2,360**	B
C	**10,600**	**8,750**	**4,080**	C
D	363	205	**4,720**	D
E	905	**2,120**	**2,680**	E
F	**4,360**	**19,700**	**1,990**	F
G	**1,240**	**2,190**	Off site	G
H	554	**1,100**	Off site	H
I	**4,040**	**2,550**	Off site	I
J	**4,590**	**1,920**	Off site	J
	1	2	3	

Notes:

All concentrations are presented in parts per million (ppm).
Bold values exceed the lead cleanup objective of 1,000 ppm.

Off site = No sample collected; grid cell lies outside facility boundaries

3.3.1.2 Confirmation Sample Results for Lead in Soil 6 Inches bgs

At the Lefton East facility, one discrete confirmation soil sample was collected within each grid cell 6 inches below the excavated ground surface that existed prior to backfilling. This sampling effort was conducted to estimate the volume of soil that might require future removal. Table 7 summarizes the residual lead concentrations detected in the soil samples collected 6 inches bgs at the Lefton East facility. These types of samples were not collected at the Lefton West facility.

TABLE 7

RESIDUAL LEAD CONCENTRATIONS IN LEFTON EAST FACILITY SOIL 6 INCHES BELOW GROUND SURFACE

	1	2	3	
A	NSC	NSC	NSC	A
B	372	**50,000**	42.5	B
C	**21,600**	**5,990**	**2,580**	C
D	**6,680**	**1,610**	**3,150**	D
E	174	189	**4,940**	E
F	**6,930**	390	479	F
G	686	460	Off site	G
H	340	363	Off site	H
I	392	**1,900**	Off site	I
J	**5,330**	**3,230**	Off site	J
	1	2	3	

Notes:

All concentrations are presented in parts per million (ppm).
Bold values exceed the lead cleanup objective of 1,000 ppm.

NSC = No sample collected because of small grid cell size
Off site = No sample collected; grid cell lies outside facility boundaries

3.3.1.3 Confirmation Sample Results for PCBs in Surface Soil

Table 8 summarizes residual PCB concentrations detected in surface soil after excavation at the Lefton West facility. Each PCB concentration presented in the table was detected in a soil sample composited from nine points within a 100- by 100-foot grid cell. The surface soil represented in the table was later covered with clean, imported soil. No surface soil samples were collected for PCB analysis at the Lefton East facility.

TABLE 8

RESIDUAL PCB CONCENTRATIONS IN LEFTON WEST FACILITY SURFACE SOIL

	1	2	3	4	5	6	
A	BDL	1.9	11.9	7.2	NSC	NSC	A
B	BDL	20.4	BDL	**373.7**	NSC	NSC	B
C	7.9	3.4	32.6	**55.7**	40	20.7	C
D	BDL	5.4	**68.4**	**77.7**	35.6	**56.1**	D
E	3.3	0.47	**58.6**	**121.8**	17.4	20.9	E
F	2.1	1.6	34	**176.5**	**323**	0.42	F
G	Off site	Off site	Off site	16.9	**83.2**	0.04	G
H	Off site	Off site	Off site	42.4	2.7	15.3	H
	1	2	3	4	5	6	

Notes:

All concentrations are presented in parts per million (ppm).
Bold values exceed the polychlorinated biphenyl (PCB) cleanup objective of 50 ppm.

BDL = Below detection limit
NSC = No sample collected; surface covered by concrete, buildings, or clean rock
Off site = No sample collected; grid cell lies outside facility boundaries

3.3.1.4 Confirmation Sample Results for PCBs in Soil 6 Inches bgs

At the Lefton East facility, one discrete confirmation soil sample was collected within each grid cell 6 inches below the excavated ground surface that existed prior to backfilling. This sampling effort was conducted to estimate the volume of soil that might require future removal. Table 9 summarizes the residual PCB concentrations detected in the soil samples collected 6 inches bgs at the Lefton East facility. These types of samples were not collected at the Lefton West facility.

TABLE 9

RESIDUAL PCB CONCENTRATIONS IN LEFTON EAST FACILITY SOIL 6 INCHES BELOW GROUND SURFACE

	1	2	3	
A	NSC	NSC	NSC	A
B	8.7	0.8	BDL	B
C	27.4	**134.9**	14.9	C
D	**62.3**	23.5	13.7	D
E	BDL	1.5	39.8	E
F	**95.7**	12.1	2.98	F
G	20.2	0.0	Off site	G
H	BDL	9.4	Off site	H
I	26.3	33.4	Off site	I
J	**336.7**	**117**	Off site	J
	1	2	3	

Notes:

All concentrations are presented in parts per million (ppm).
Bold values exceed the polychlorinated biphenyl (PCB) cleanup objective of 50 ppm.

BDL = Below detection limit
NSC = No sample collected because of small grid cell size
Off site = No sample collected; grid cell lies outside facility boundaries

3.3.2 Residual Contamination and Identification of Impacted Soil Locations

Lead concentrations exceeding 1,000 ppm and PCB concentrations exceeding 50 ppm remain in site soils. Although U.S. EPA increased the project budget ceiling from $3,158,477 to $4,488,801, not all impacted soils at the site could be removed. However, significant soil removal activities were conducted at the site, and U.S. EPA decided that contaminant concentrations above the project action levels of 1,000 ppm total lead and 50 ppm total PCBs could remain in site soils based on the following considerations:

- Approximately 35,000 cubic yards (44,952 tons) of impacted site soil was shipped to off-site disposal facilities.
- The soil barrier was installed and over-seeded with drought-resistant grass to prevent soil erosion.
- As a result, contaminant concentrations exceeding action levels no longer exist at the surface.
- PCBs are hydrophobic and do not move readily through the soil matrix.
- Security fencing remains in place around the site.
- At the discretion of U.S. EPA, future deed restrictions could be established to identify the site as being environmentally impacted and to limit its use.

Prior to backfilling activities, the U.S. EPA OSC instructed ERRS personnel to place a visual demarcation at the horizontal interface between impacted soils and clean backfill. The purpose of this demarcation activity was to facilitate any future excavation or development activities at the site. Specifically, 25-foot-wide, orange snow fencing with a tight mesh spacing was placed over impacted soils before backfilling so that any future excavation personnel would have a visual indicator denoting the impacted soil and clean backfill interface.

The following impacted soil cell locations were identified with orange snow fencing at the Lefton West facility: D-3, E-3, B-4, C-4, D-4, E-4, F-4, F-5, G-5, and D-6. Exhibit 1 visually displays these locations of residual soil contamination.

EXHIBIT 1

LOCATIONS OF RESIDUAL SOIL CONTAMINATION AT LEFTON WEST FACILITY

CELL	1	2	3	4	5	6
H						
G					▨	
F				▨	▨	
E			▨	▨		
D			▨	▨		▨
C				▨		
B				▨		
A						

Legend:

Grid cell location with orange snow fencing denoting interface between impacted soil and clean backfill

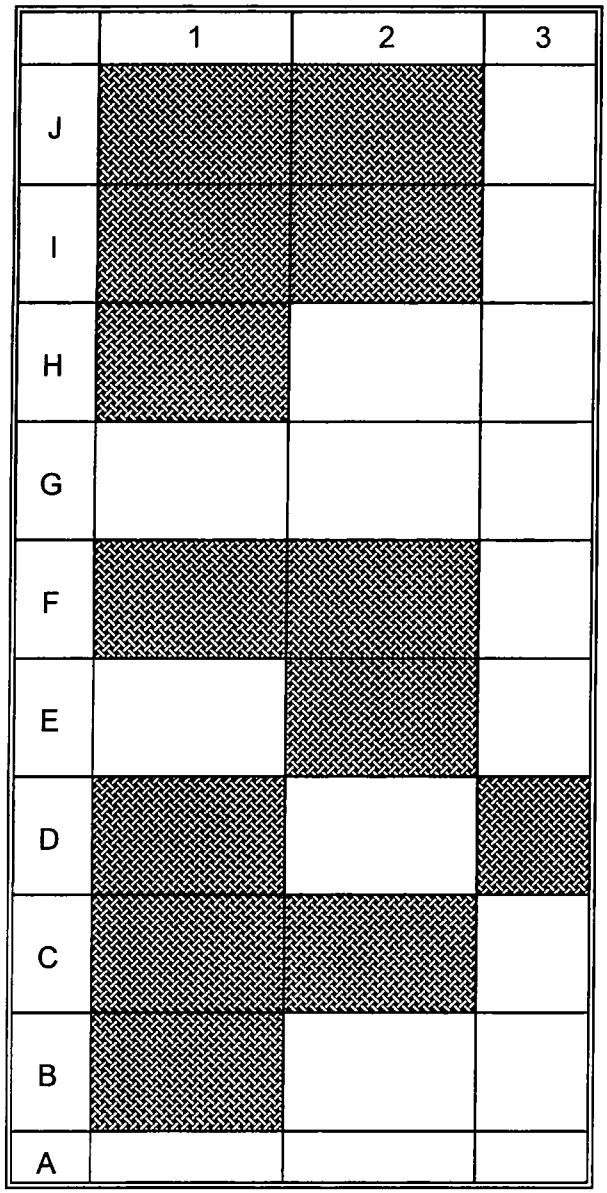
▨

Grid cell location without orange snow fencing

The following impacted soil cell locations were identified with orange snow fencing at the Lefton East facility: B-1, C-1, C-2, D-1, D-3, E-2, F-1, F-2, H-1, I-1, I-2, J-1, and J-2. Exhibit 2 visually displays these locations of residual soil contamination.

EXHIBIT 2

LOCATIONS OF RESIDUAL SOIL CONTAMINATION AT LEFTON EAST FACILITY



Legend:

Grid cell location with orange snow fencing denoting interface between impacted soil and clean backfill

Grid cell location without orange snow fencing

3.4 FINAL SITE RESTORATION

Every effort was made to remove as much lead- and PCB-impacted soil as possible from the site given the project funding ceiling. Specifically, procurement of heavy equipment, excavation, sampling, procurement of clean backfill, and installation of a clean soil barrier were all budgeted and conducted in such a way as to maximize the amount of impacted soil shipped and disposed of off site under the project budget. During soil barrier installation, clean, imported backfill was spread by a flat-bladed bulldozer and simultaneously machine-tracked into place. No soil compaction specification was required for the backfilling. After 46,578 cubic yards of backfill had been compacted into place, a drag harrow was used to break up clumps of soil and level the soil to the existing grade. Multiple passes of the drag harrow were made to create a smooth and level surface.

In the middle portion of the Lefton West facility, a storm water collection trench was installed to allow storm water distribution and management. This trench was installed in an east-west direction to complement the existing gradients and storm water flow patterns at the facility and on bordering properties. At the Lefton East facility, the gradient for storm water flow was left more natural and level, allowing water to move from the center of the facility to points outside the property boundaries. At the conclusion of site restoration activities, drought-resistant fescue grass was broadcast-applied at both facilities.

In early September 2002, demobilization activities commenced. All remaining rental equipment was cleaned and returned. Also, electric and telephone utility connections to the site were terminated. The remaining field office trailers were cleaned and returned to their owners. The facility security gates were securely locked on September 13, 2002, after all temporary office equipment and supplies had been removed.

4.0 SUMMARY

From October 2001 to September 2002, U.S. EPA and START provided continuous oversight and monitoring throughout the time-critical removal action at the Lefton Iron & Metal site in East St. Louis, St. Clair County, Illinois. In addition to documenting site activities and collecting confirmation samples, START assisted U.S. EPA with project management oversight. Project mobilization began on October 24, 2001, and demobilization was completed on September 13, 2002. Approximately 35,000 cubic yards (44,952 tons) of impacted site soil was shipped to a Subtitle Class "D" solid waste landfill or a TSCA landfill for disposal. Because of the large amount of lead- and PCB-impacted soil that was present at the site, not all the impacted soil could be removed under the project budget. However, the removal action included placement of a clean soil barrier over both the Lefton West and Lefton East facilities to eliminate the direct exposure pathway for site trespassers. The soil barrier was seeded with drought-resistant grass to prevent erosion of the clean, imported soil.

In April 2002, the U.S. EPA OSC requested and obtained a project funding ceiling increase to cover unexpectedly large PCB-impacted soil disposal requirements. The ceiling increase also covered the installation costs for the clean soil barrier and for the visual indicators (orange snow fencing) in the PCB-impacted grid cell locations at both the Lefton West and East facilities.

START does not anticipate any further activities under the TDD.